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Crowdsourcing in the Fashion Industry

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Abstract

In today's cutthroat competitive world of fashion, flexibility and adaptability are essential elements for a company to survive in this industry. As such, there is a growing interest for open innovation and crowdsourcing as tools that might boost the competitiveness in the industry. By embracing open innovation, the use of external knowledge to emphasize internal creativity and expand market influence, industries can reach beyond their own internal resources and develop better ideas, faster and at a lower cost. The fashion industry is no exception. Specifically, crowdsourcing is lowering the fashion industry's barriers to entry and giving the public an opportunity to not just shape a brand but also determine the trends of an entire sector. This chapter aims at analyzing the features, the pros, and the cons of crowdsourcing in the fashion industry focusing on the perspectives of both the companies and the customers.

Keywords: crowdsourcing, open innovation, co-creation, fashion industry, business model innovation

1. Crowdsourcing: from its origins to the recent implementations in the fashion industry

At a first glance, crowdsourcing is a relatively new concept in (and not only) the management studies. Actually, Howe [1] traced the very first example of crowdsourcing to 1714, when the British government announced a competition on the idea of a way to establish the longitude of a sailing ship during navigation, offering a reward of 20,000 pounds to anyone who managed to find a solution. The Royal Navy and the greatest scientists, among them Isaac Newton, had failed in trying to develop a tool capable of calculating longitude and it was a cabinetmaker named John Harrison to devise a watch able to find this measurement with great precision even during trips to the open sea. Thus, a subject who had not received any specific training in the field won the award by designing the first model of marine chronometer, an effective solution to the problem of the British government, reached by submitting it to an extremely broad public and with the most varied skills.

From an etymological point of view, the term "crowdsourcing" was coined by Jeff Howe in an article entitled *The Rise of Crowdsourcing* and published in the *Wired* magazine in the June 2006 edition. Howe combines the words "crowd," i.e., crowd/common people, and "sourcing," intended as assignment or procurement, to describe the act performed by a company or an institution consisting in outsourcing an activity, normally carried out by its members, to a network of people not linked by organizational constraints and usually strangers to each other.

The two macro-phenomena that led to the birth of crowdsourcing according to Pellegrini [2] are the crisis of the industrial economic system, which has stimulated the search for new ways of finding and organizing resources and creating value, whose primary source has become knowledge, and the incessant development of networks that allow the connection and communication between people more or less close to each other, primarily of the Web. About the Web, the most significant evolutionary step of the Internet is that from Web 1.0 to Web 2.0, which is traced back to 2004, when the American publisher O'Reilly Media organized a series of conferences on new user network opportunities. While the Web 1.0 made it possible to simply browse through the pages of static sites and without interaction methods, or the only acquisition and dissemination of encoded knowledge (information), Web 2.0 is characterized by the interactive aspect, which allows user no longer just to enjoy, but also to create content. Today, therefore, the Internet allows us to enhance human intelligence, provides a means for the creation of new knowledge, considering the difficulty and inadequacy of codification in environmental complexity, and encourages sharing and participation in projects and innovations. Moreover, the development of the Web, as a production tool free from logistic constraints, has contributed to creating a growing number of intangible assets, further increasing the value attributed to knowledge.

Therefore, crowdsourcing is a product of the knowledge society. As described by Pellegrini [2], the knowledge economy is characterized by the search for forms of collaboration and sharing to strength the ability of interpretation and action of organizations in a highly dynamic reference environment, and by the desire of consumers to assume a growing awareness and to become an active part of the creative and productive processes.

Considering a more micro level of analysis, and therefore evaluating in detail the origins of crowdsourcing, the main phenomena that have prepared fertile ground and influenced its development are the activities of innovation and user customization. These phenomena are attributable to the logic of prosumerism and to the movement of open source software, to which are added, feeding them, the democratization of information, of the means of production and distribution and the evolution of networks and of online communities.

These trends seem to affect every economic sector in a huge number of industries. Nevertheless, the most significant and fruitful implications are coming out from those industries where the active involvement of external stakeholders in the decision-making processes, during the ideation and all prior stages of the production activity, can generate a meaningful and substantial reduction in cost function and risk management. To achieve this efficiency goal, among all firm's stakeholders, a special focus has to be addressed toward customers. Transforming current and potential customers from mere buyers to actors with a voice in the firm's decisions is a strategic way to motivate them and build a bond of trust sustainable over time.

For a long period of time, the textile industry, the apparel industry, and the accessories industry, or—more in general—the fashion world, have based their businesses on the ability to predict (and in the same case to impose) what people wanted [3]. Marketing departments, as well as style and creative directions acting in the main fashion companies, are characterized for a huge apparatus for selecting what is going to be popular in the next future. Based on these expectations, they create new collections available in the market. Nonetheless, the democratization process that worldwide is affecting every industry has recently occurred also in the fashion system, where potentially anyone could be a designer, a creator, or a manufacturer. Moreover, the symbolic value attributed to fashion products calls for a more active role of the customer, which becomes part of the key successful factors on which the brand equity has to be built.

1.1 Prosumerism, user innovation, and customization

The profound awareness of one's own needs and the tendency to privilege the symbolic meaning of goods as an expression of one's own identity have increasingly encouraged consumers of the knowledge society to manipulate the outputs of enterprises, both on the semantic level, through the attribution of meaning, and on the one related to tangible characteristics and components, giving life to the idea of prosumerism [4]. Some subjects, that for their particular and innovative skills take the name of "lead user", have come to develop into solutions that meet their needs and, in some industrial sectors, are even the architects of most new products and services [5]. The innovations created by users, defined "user driven innovation" (or simply "user innovation"), include changes made directly to the goods produced by a company, proposals for changes in design and/or in properties submitted to an organization, and products created in a complete and personal way.

Seizing this trend, some companies, Nike and Levi's among the first, decided to involve customers in their creative activities on their own initiative, allowing them to customize standard articles through a platform on the company Website [6, 7]. This first step taken by organizations toward the possibility of voluntarily involving consumers in production cycles is described as "mass customization" and consists of the attempt to combine mass production with customization, maintaining cost efficiency and developing greater flexibility and ability to meet the specific needs of individuals. One aspect of the customization activity performed by customers, that is particularly significant and apparently paradoxical, is its free nature, considerable as an emblem of the main motivation that pushes consumers to do their job, that is the satisfaction obtainable through the subsequent consumption of the personalized product and often also through the creative action itself.

Over time, the collaboration of companies with users has intensified, in particular addressing the co-creation of new offers together with the lead users, which are in fact recognized of the features that can be advantageously exploited in the problem-solving processes of the organizations and above all in innovation projects. Specifically, Von Hippel [8] identified two distinctive elements of these consumers: the ability to predict market trends, experiencing first of the needs that will emerge in the future in the entire population of which they are part, and the great motivation to identify a solution that satisfies them, determined by the high benefit they can derive from it. These two aspects are strongly correlated with the likelihood that lead users to engage in the development of new products or in the modification of existing ones, further increased by their significant degree of expertise. As a result, as it has been demonstrated by several studies, most of the user innovations are carried out by subjects belonging to the category of lead users, and even the attractiveness they exert toward the companies and the intention of the latter to translate them into commercial products increase proportionally compared to the extent to which the designers have this connotation. These dynamics are the prelude to open innovation, of which crowdsourcing is sometimes defined as one of the key techniques [9], and which in any case provides many collaborative ideas and development elements to this model of joint problem solving.

In close connection with the ambition of consumers to become producers, the phenomenon of amateurs has arisen, who realize by passion and without receiving a form of income the same tasks that other specialized subjects perform by profession. The amateur rebirth, which stimulates, among other things, the collaboration between people with professional backgrounds and very different skills, is defined by Howe [1] as "the fuel for the crowdsourcing engine."

One factor that has greatly influenced the rise of amateur activities, and consequently also the development of crowdsourcing, is the search for rewarding

experiences outside the work environment, prompted in turn by the high rate of job dissatisfaction, caused by demand from the world of work of ever greater levels of specialization and the resulting impossibility of many individuals to feel fulfilled, despite the quality of their training and the variety of interests and knowledge.

Thanks to the increasing degree of education of the company, to the ease of access to information, favored by the dissemination of news and knowledge through the Web, and to a sort of democratization of the production instruments, extremely cheaper and easier to use, the heritage of knowledge and skills, that both consumers and amateurs are in possession of, is increasingly richer and allows them to compete with professionals substantially in all fields of knowledge (information technology, journalism, science, etc.). This leads to the emergence of the figure of the prosumer and that of the Pro-Am, identified by Charles Leadbeater and Paul Miller [10] and resumed by Howe [1], which shares the quantity and quality of the commitment lavished by the amateur, such as to compare it to professional work. The appearance and the emergence of these subjects have certainly played an important role in the development of crowdsourcing, but the people that make up the crowd, and to which the organizations can therefore turn for a collaborative problem-solving action, not necessarily can be qualified as prosumers and Pro-Am according to their precise definition. In fact, crowdsourcing can involve individuals potentially endowed with any degree of specialization and professionalism (experts in the field, scientists of the discipline, fans of the subject, consumers of the product, etc.), but generally united by the desire to participate and lend their own work in a specific project mainly not for an economic return but for reasons related to pleasure, interest, leisure, and personal satisfaction. Crowdsourcing can provide for forms of material compensation, i.e., prizes and rewards of various entities, which can encourage participation, but these do not prevail over amateur reasons.

1.2 Open innovation and crowdsourcing

Another influential phenomenon on crowdsourcing is open innovation. Specifically, open innovation emerges from the extension of the collaborative approach of an organization with consumers, and in particular with lead users, to a wider variety of partners, also welcoming the ideas of wisdom of crowd and transparency that can be found in the open source model. The concept was introduced for the first time by Henry Chesbrough, the author of the book *Open Innovation: The New Imperative for Creating and Profiting from Technology* [11], and is based in particular on the need for an organization to open up to cooperation with external actors at its own boundaries in research and development activities, to obtain technological and above all cognitive resources, taking up the key points of the approach of collaborative networks regarding interorganizational relations, but naturally referring to all the possible relations of the company with external subjects. In fact, open innovation is also born as an answer to the environmental uncertainty, to the complexity of innovative processes, and to the increasing diffusion of knowledge in society and is realized in a growing degree of permeability of organizational boundaries and in the connected adoption of more open interaction methods with an ever-wider range of stakeholders, including consumers, suppliers, competitors, and universities [12–14]. Chesbrough [15] underlined the need to overcome the closed innovation approach, especially in sectors such as information technology, where the life cycle of products is very short, and it is not possible to exercise sufficient control over the dynamics of the market. In particular, in these circumstances, it would be more effective to increase transparency and to share resources and opportunities among the actors present in the environment.

Gassmann and Enkel [16] identified three possible models of open innovation: the outside-in model, which favors an enrichment of the skills of a company, thanks to the integration of external sources of knowledge in the processes of knowledge creation; the model inside-out, which involves an inverse process, i.e., the outsourcing of internally generated ideas and innovations making them available for exploitation by other subjects in the reference environment, an alliance model between different partners that consists of a combination of the two previous approaches. How the logic of open innovation is implemented includes contestations and competitions of various kinds, alliances, joint ventures, licensing agreements, open source platforms, and development communities [14].

Seltzer and Mahmoudi [9], considering the natural dependence of the effectiveness of open innovation processes from the contributions of external actors in terms of innovative ideas and new knowledge for an organization, listed a series of management and implementation practices. First and foremost, an open company should attract a large group of collaborators, grasping the teaching of open source experiences, define the expectations on the level of partner participation, and identify ways to profit from open innovation, balancing the aspects of creation and appropriation of value through a real open strategy. As for the implementation methods, the company can decide, for example, to draw up a contract of various types with competitors or not, to commission the development of ideas to key customers, to create partnerships with suppliers, and to resort to crowdsourcing.

Therefore, crowdsourcing can be seen as a strategy of implementing open innovation, but, according to another possible perspective, also as an independent problem-solving technique that intersects with the practice of open innovation if the problems faced are linked precisely to innovative processes. However, the distinction between these interpretations tends to fade if one examines the meaning attributed to the term “innovation”, as a creative and efficient recombination of existing inputs to produce new value outputs [14], substantially coinciding with the current conception of an effective problem-solving activity.

In any case, crowdsourcing finds both the need for an organization to open up to the flow of external knowledge as well as the idea of creating the value of the philosophy of open innovation as integration and transformation of internal and external resources and skills. Consequently, in addition to the management techniques introduced a little above, there are several measures that can be implemented for open innovation activities that can also be validly used in the organization of crowdsourcing. These include an accurate description of the problem to be solved, without revealing the possible solution options developed by the organization, so as not to influence and therefore fully exploit the thinking and the potential for reflection of the subjects involved from the outside; a careful definition of the context in which the problem is placed, so that the issue to be addressed is clear; a complete illustration of the concepts, without taking their knowledge for granted; the exposure of the limits of the company in applying a possible solution, so as to limit the research to the feasible options; sharing all available knowledge; and finally an orientation toward quality results that, even under different aspects, have a value for all the people involved in the innovation process [17].

2. Structure and declinations of crowdsourcing

Zhao and Zhu [18] defined crowdsourcing as a “collective intelligence system” and identified three constituent components of the model, i.e. the crowd, the organization that uses this problem-solving mode and therefore benefits from the work of

the crowd, called client company, and the place, physical or virtual, which allows the connection between these two protagonists and hosts all the activities of the process.

Considering the various categories, we can see the flexible nature of crowdsourcing, which can in fact take many activities into its logic, revealing a model that can be applied in a variety of situations and even not only in the economic but also scientific, political, social, and many other sectors. Brabham [19] noted that crowdsourcing, with the diversity of its possible applications in a plurality of industries, stands as a model for solving both daily and rather trivial and complex problems. Furthermore, he argues that it is not merely an approach to the exploitation of reports and contributions enabled by the Web, but a real strategic model aimed at attracting a large group of individuals interested, motivated, and able to develop solutions superior to those achievable through the most traditional forms of business and procedures, both from a quantitative and a qualitative point of view.

From this conceptual perspective, crowdsourcing is experiencing a clear success in the fashion system. In fact, this phenomenon is significantly modifying the structure of the industry from both a productive and retailing points of views. Indeed, the number of firms diving into the crowdsourcing arena is growing exponentially and examples include every step of the value chain.

For the purpose of mapping the strategies and the main outcomes of the crowdsourcing activities, we propose to investigate them according to the stage of a fashion firm's production cycle in which it can occur. Ideally, following a traditional fashion value chain, we can identify four main phases: inspiration, creation, production, and distribution [20].

Traditionally, the inspiration phase is a matter of the designers of the fashion firms: they usually conduct a personal analysis of new trends and market preferences to develop the concept of the new collection. The ability to identify and catch the right stimuli is the real foundation for the success of this stage. Starting from this consideration, the involvement of the customer base is a good means to monitor their preferences and develop new ideas consistent with them. Many firms regularly use polls, focus group or man-on-the-street observations and interviews to track any changes in tastes and trends, but crowdsourcing offers a reach and a dialog on a wider scale unreachable with other traditional marketing techniques.

The second phase—the creation—starts with the approval by the firm's creative direction of the collection concept and it consists of the realization of the first prototypes. In other words, this is the product design step where a set of strategic and operational activities turns ideas into tangible products. Here, again we can underline the same considerations about the value that a crowdsourcing technique can bring in coping with the risks.

With the third phase, the firm launches the production, supporting ex ante all costs. In fact, fashion companies try to create value by producing clothes that people want to wear and bearing the connected economic and financial risks. In order to reduce these risks, firms can conduct product test on some items, but the results of this activity can be hardly generalized to the entire collection and to all available markets.

Finally, with the distribution phase, firms plan their placement and strategies leveraging on market tests conducted on the most significant geographical areas.

This pattern is consistent with the four possible variations of crowdsourcing proposed in the literature and described below. Specifically, we want to identify under which conditions the four possible configurations of crowdsourcing can match with the different phase of the production cycles previously described, without highlighting any single and exclusive link between each step of the value chain and each crowdsourcing configuration.

2.1 Crowd wisdom

The first of the forms of crowdsourcing listed is based entirely on crowd wisdom, fully sharing its principles, so much to be identified with it. The choice to resort to this type therefore stems from the desire to exploit the knowledge of a large number of people, recognizing the egalitarian hypothesis expressed by Howe [1], so each individual has some knowledge or talent that is of value for some other individual. The goal of crowdsourcing is therefore to connect those who hold a knowledge with those who consider it useful and, since everyone can provide some valuable contributions to the level of knowledge, thanks to their private information, to extend as much as possible this network of connections.

A fundamental concept that supports the search for the involvement of a multitude of subjects in decision-making processes is the one formulated by the “Theorem of diversity that beats talent”, interpreted in the book by Ostrom [21] “The Difference. How the Power of Diversity creates Better Groups, Enterprises, Schools and Societies”, which proposes a logical/mathematical analysis of collective intelligence. Along this conceptual framework, Page [22] stated that, given certain circumstances, the solutions developed by a randomly selected group of people are seen by a group of selected subjects as the best results. This theorem, verified by many academic studies [23], is based on the observation that the talented subjects, in a given field, constitute a homogeneous group, since, in most cases, they have followed the same training path, even attending the same schools, and consequently, they tend to apply similar, if not identical, solutions to processes and problems. Specialized knowledge is better than generic knowledge, but in its specific context of reference and, moreover, the resolution of most problems, especially of those that are complex, implies the appeal to different spheres of knowledge.

Therefore, the experts are better than the crowd, but in less contexts, and the latter generally obtains the most effective results in the problem-solving processes, being able to count on a wide variety of heuristics and solution techniques.

Page’s theorem affirms the essence of collective intelligence, that is, the belief that the combined action of a group of different people can lead to a better decision than any person individually could take. This principle directly links another significant aspect that can be found in problem-solving activities, namely the high probability that solutions emerge from the most unexpected subjects. According to Lakhani et al. [24], this counter-intuitive outcome derives from the ability of the actors who are intellectually distant from the field of skills that would tend to apply to a given problem to interpret the question in a new way, according to different perspectives, and to apply solutions that are known to them but unusual in that domain of knowledge. The so-called breakthrough thinking emerges almost always in subjects who have not had previous experience in the area in which the problem is inserted, precisely because they are free of conditioning and conjectures on the techniques considered traditionally suitable for the resolute approach. Applying the theory of diversity, crowdsourcing favors this result, since it involves a group of people endowed with skills in different fields and therefore analyzes the situation to be faced according to alternative and often unusual perspectives.

Howe [1] realized that a company that decides to rely on crowd wisdom to find the solution to its problem outperforms the predominant trend in business (and also in human networks) to address people and other similar organizations, which, since they are similar, they know each other well and consequently adopt similar methods of analysis and action. In this case, crowdsourcing makes use of the “strength of weak bonds”, as defined by sociologists, i.e., the greater possibility of progress provided by unknown actors and realities, which bring new ideas and new approaches to resolution, which on the one hand, thanks to their variety, increase

the probability of finding a solution and on the other could also determine the discovery of an unexpected line of action which proves to be superior to the options drawn by the traditional heuristics.

Today, companies exploit collective intelligence in problem-solving processes, anticipating future results and addressing company strategies. In particular, Howe [1] indicated for crowd wisdom based crowdsourcing three even more specific connotations, namely the application in the market of forecasts (or information market), the crowdcasting, which consists in the assignment of a business problem to a network indefinite of potential external solvers, and the idea jam (or idea dump, translatable as “crowd of ideas”), which aims to gather many ideas and insights into a brainstorming logic, without reference to a specific problem to be addressed. In the case of the forecast market, the crowd is assigned the task of predicting the winner of some kind of competition or the result to which a certain “future” contract is linked. In crowdcasting, the actors involved in the network can decide to tackle problem-solving activities individually or to organize themselves in groups. Finally, the idea jam usually envisages the development of crowdsourcing on the Web, configuring itself as a sort of online suggestion box and allowing anyone to propose their own ideas, which can then be discussed with other people.

In general, in this first analyzed form of crowdsourcing, discussions and the search for a consensus among the actors involved in the process are avoided, as the strength of this model lies in the sum of the differences, which are maintained by leaving each his own autonomy, while aggregating the contributions of all, so many separate actions are realized that flow into a collective problem-solving activity.

Moving on to the debate on our field, the wisdom configuration of crowdsourcing allows fashion companies to aggregate the knowledge of a large number of current and potential new customers in exploiting new trends and tastes in the fashion industry.

Evidence shows numerous examples of the benefits of this activity. A very interesting case comes from Nike. Back in 1999, the sportswear firm introduced customized sneakers and currently it has broadened the program including a huge variety of options also on clothing and sport equipment until to let customers to share and order each other's design in its online gallery as well as in its app developed for Android and Apple users. The most recent development in improving Nike's customer shopping experience is the “Consumer Direct Offense”, a new company alignment that allows Nike to better serve the consumer personally, at scale. In the new alignment, the company drives growth by deeply serving consumers through personalized services in 12 key cities, across 10 key countries: New York, London, Shanghai, Beijing, Los Angeles, Tokyo, Paris, Berlin, Mexico City, Barcelona, Seoul, and Milan. These key cities and countries are expected to represent over 80% of Nike's projected growth through 2020.

Moreover, stressing on the problem-solving final aim, usually associated with the crowd wisdom, this configuration of crowdsourcing can support fashion firms in identifying solutions to specific managerial issues. An example is represented by the “Design the next Coach Tote” campaign launched by Coach to engage a younger market, both ensuring the successful understanding of its customers' needs and repositioning its brand on this segment of the market. The campaign, conceived to allow consumers to design their own Coach bag, was successful, thanks to more than 1700 participants and 3200 submissions of new different tote bag designs over 6 weeks. Currently, the company still offers the possibility to personalize some bags and sneakers with the choice of patterns and pins.

2.2 Crowd creation

The second declination of crowdsourcing described by Howe [1] is aimed at exploiting the creative energies of the crowd, which translate into user generated content, or online content, innovative ideas, and new products, made in a collaborative way. The desire of the companies that make use of this form of crowdsourcing is precisely that of channeling the creativity of the external stakeholders in their commercial offer, through the creation of a community production.

The processes of crowd creation differ greatly from those that use collective intelligence, based on the interaction between the subjects involved in a given work, which is instead avoided by crowd wisdom in order to protect the diversity of thought. The aggregation of dispersed know-how developed autonomously is thus replaced by the formation or support of a community of individuals who share the passion for a certain activity and who, driven by the affinity descending from this common interest, want to confront and communicate with each other. Therefore, the fundamental element that makes crowd creation possible is the social environment, and the protagonists of this type of crowdsourcing are the communities that emerge, mostly spontaneously, in the new ecosystem of interconnected subjects.

The central role assigned to communities highlights another fundamental difference between crowd creation and the exploitation of crowd wisdom: while the decision of a company to make use of collective intelligence appears to be an alternative to other problem-solving techniques, by offering new but in any case, additive value with respect to internal tools and resources, the involvement of communities formed autonomously by amateurs and consumers is sometimes an almost obligatory choice. In fact, these communities constantly increase their capacity to perform functions similar to those of companies, with the risk of threatening the survival of the latter, if they are not able to recognize and benefit from the increased skills and organization of their stakeholders. Moreover, since communities formed by amateurs and/or consumers self-organize, they do not allow themselves to be managed, but can only be guided by companies. Therefore, it is not easy for an organization to be able to build and maintain these groups, toward and in which full transparency must be guaranteed, in such a way that a relationship of trust and real partnership between company and crowd is created. In fact, the latter must not feel exploited, but must perceive a balance between the advantages offered and received through the work of the crowdsourced work, which leads to the achievement of effective and efficient results precisely in conditions of harmony between the company and the community. The self-organization of the communities is itself one of the main sources of efficiency of crowd creation, as it substantially corresponds to their ability to distribute intellectual resources in an organic way, which is more functional to problem-solving processes than a hierarchical structure of tasks and knowledge.

The development of this second form of crowdsourcing takes place through the interactions of the members of a community, who actually act collaboratively, assisting each other and exchanging opinions. Because of the benefit directly obtainable from the solution and/or from the job, these subjects are strongly motivated to participate in the problem-solving process, normally linked to the commercial offer of the company, and to favor the achievement of the best possible result. Consequently, crowd creation activities are characterized by the search for an improvement of their knowledge and skills and, therefore, by the predominant role of learning processes.

The user generated content, with which we normally refer to as the content produced and published on the Web by consumers, is one of the main forms of crowd creation, which often takes place via an online platform. In fact, users have increasingly revealed the desire not only to take part in the creative and productive activities of companies, but also to interact with the media, synergistically

combining these two aspects and providing their contributions via the Internet. The latter, thanks above all to the more interactive connotation of Web 2.0, lends itself to a cooperative approach to work, naturally encouraging the exchange of information and ideas and a decentralized but almost unlimited participation. However, by accepting a smaller presence of subjects involved, this type of crowdsourcing can take place profitably even in a physical place, which may represent a better choice than the online environment depending, for example, on the level of complexity of the problem to be addressed or on the degree and type of interactions required for the dissemination and creation of knowledge.

Among the several examples of the application of crowd creation in the fashion industry, some interesting cases emerge from the footwear sector. In fact, as the Nike example previously described shows, the footwear industry seems to be one of the most vibrant sectors in the fashion industry, as previous studies underlined [25–27]. Among the most dynamic firms, Keds is perhaps the largest and best-known company whose success is based on its ability to set up a marketplace for customized products. Launched in 2008, the “Keds design your own custom shoes” program lets online customers to choose among a huge selection of alternatives to personalize their own sneakers. Moreover, for a period of time, visitors could share and sell their creations on Zazzle.com, setting their own royalty from 10 to 99% above the base shoe price of \$60. Furthermore, Keds, together with the American department store chain Bloomingdale’s and the Whitney Museum, has created a project to sell art to the masses in the form of footwear. Acting as sponsor of the Whitney Museum of American Art Summer Season, Keds launched the KedsWhitney shoe collection, consisting of sneakers designed by conceptual artist Jenny Holzer, who created limited-edition shoes sold at Bloomingdale’s stores in Midtown and SoHo.

2.3 Crowd voting

The third form of crowdsourcing aimed at exploiting the skills of the crowd arises essentially from the difficulty for a company to evaluate all the numerous contributions that the crowd itself provides in the context of a given activity entrusted to it. The complexity of analysis evidently increases proportionally to the quantity of ideas and solutions proposed and, therefore, the use of crowd voting is mainly found after problem-solving processes based on crowd wisdom or idea jam sessions. To overcome the problem of examining the multiplicity and diversity of contributions, the power to judge them is shifted from producers to consumers, so “the crowd provides creative talent as well as acumen to evaluate this talent” [1].

These filtering operations of proposals and decision between them can easily take place online and are even the preferred tool for the governance and classification of information on the Web, which no single individual or company could be able to organize. In fact, the Google search engine, recognizing the possibility of ordering an immense amount of information and notions through the aggregation of individual decisions, attributes to Internet users the power to determine the value of information, which moreover is exercised without any additional effort, through normal browsing behavior. However, online voting also presents a risk of alteration of the results through vote buying and selling actions, which clearly compromise the validity of the overall judgment.

The collective choices resulting from crowd voting are therefore a collaborative filter, which allows organizing information and contributions based on the relevance that is attributed to them. This result is achieved both in the case in which the judging mechanism is passive (as is the case with Google) and in the case in which it is active. The passive filter is configured as a sort of unconscious evaluation, using the data generated by the choices and the digital paths of the various

users of the network as a database of organizational knowledge, to be exploited in the management and classification of information. The active filter, on the other hand, coincides with a form of analysis and conscious decision by people, who are explicitly called to express their judgment on a set of contributions.

Companies that decide to implement a form of crowd voting learn opinions and needs of consumers, which allow, for example, a better understanding of the demand for products and services offered and to schedule production accordingly; they also promote consensus and trust stakeholders who want to be involved in business processes.

With particular reference to participatory media, Howe [1] reported a rule that summarizes the dynamics of the first three declinations of crowdsourcing from the point of view of participation, the value and the type of contribution made by the subjects that make up the crowd: the “rule 1:10:89,” according to which “of every one hundred people on a given site, one will really create something, 10 will vote for what it has created and the remaining 89 will simply consume creation.” Ten percent, by examining and evaluating ideas, actually performs an activity that is just as important as that of making contributions, so much so that it can still be considered a mode of creation.

Crowd voting in the fashion industry can be used according to two different patterns: firms can adopt a selective or a collective approach, depending on the role they let their customers play.

In the selective form, fashion firms seek for new ideas coming from the public and then choose how many and which among the proposed options drive into mass production. To achieve this result, companies can launch a specific contest, addressed to current and potential customers, to collect ideas for new product developments through software available online or via an app. In turn, the selection process can be guided by internal or external decision-making mechanisms. The internal selection is usually based on the verification of the matching between the characteristics of the products proposed by customers and the heritage values of the firms as well as its positioning in the market. Instead, the external selection is entrusted to a public voting, giving the customers a say in the choosing and buying process of a fashion firm. Examples of the selective crowdsourcing are the campaign “Design the next Coach Tote”, previously described, or the website Threadless.

Threadless is an e-commerce, created in 2000, and founded on an online community of artists and potential buyers who create and chose the items to be sold on the website. Each week, about 1000 designs are submitted online and are put to a public vote. Threadless allows users to vote on designs and rate them on a scale from 1 to 5. Designs are scored by the community for 1 week, before being reviewed by the Threadless staff. Based on the average score and community feedback, about 10 designs are selected each week, printed on clothing and other products, and sold worldwide through the online store and at their retail store in Chicago.

2.4 Crowdfunding

While the first three configurations of crowdsourcing enhance the skills of a crowd, in particular the knowledge and creative skills, the fourth one considers the crowd as a source of financial resources. In fact, crowdfunding, also known as “social banking”, presents some peculiarities that make it a form in a certain sense comparable to the others. In fact, crowdfunding does not exploit the skills and creativity of the stakeholders, or their judgments, but their economic availability. However, Howe [1] highlighted a series of typical aspects of crowdsourcing that are also found in this type, namely the radical change induced in the organization of

a sector, the removal of hierarchies, and the direct link between those who hold a resource and who needs it, the democratic impulse.

In addition to the direct benefit of obtaining funds, crowdfunding allows you to know if anyone is specifically interested in the development of a certain project or product, as the will to contribute financially can only be dictated by sharing the objective to be achieved or the desire to be able to purchase and consume a new product/service, with certain characteristics and with a certain quality level. Therefore, considering this declination of crowdsourcing from the perspective of problem solving, the positive impact emerges on the creation of consensus and motivation, as well as on the ability to cope with any threats and to seize the opportunities that may arise in the transactional environment.

This last configuration of crowdsourcing is straightforward to be applied to any industry, including fashion. As shown by the various crowdfunding platforms for gathering money from the public, such as Kickstarter, this phenomenon is typical of new ventures with innovative ideas to be developed. Looking at the only fashion projects available on Kickstarter (more than 25,000), it is clear how much this configuration meets the interest of start-ups and investors, also thanks to the rules that govern the funding mechanism: project creators choose a deadline and a minimum funding goal. If the goal is not met by the deadline, no funds are collected.

3. Pros and cons of crowdsourcing

3.1 Advantages of crowdsourcing

Crowdsourcing, as outsourcing a business to the crowd, implies for the company the achievement of benefits linked to both costs and risks [28]. About the economic aspect, the company is basically free to define the amount of remuneration, which can be significantly reduced compared to that relating to a function performed in outsourcing, if not even nonexistent. In fact, although professionals can also lend their jobs as part of a crowdsourcing project, they are considered on the same level as most contributors, including amateurs, consumers, and individuals wishing to spend their free time or a period of unemployment exploiting their knowledge and skills and are therefore motivated above all by opportunities for personal satisfaction, an increase in social reputation, and the reporting of their skills. A form of compensation, however limited, should still be offered, due to the positive link with the degree of involvement of people in the problem-solving process, which, among other things, considers participation in crowdsourcing, and in particular that related to complex activities, as a source of additional income. In any case, the company that decides to monetarily reward the parties that provide their contribution is obliged to pay only if the results achieved meet its expectations. Moreover, if the participants in the crowdsourcing activity are consumers of the company's products, the latter has less need to monitor the feedback on the products and, consequently, the testing phases that follow that of research and development are simpler, faster, and naturally less expensive. In addition, by examining the effects of crowdsourcing on the risks borne by the company, on the one hand, the risk deriving from the dependence on a single supplier is substantially eliminated, and on the other hand, the risk of failure inherent in any process of problem solving is externalized, also considering that the possibility that the contributions obtained are not satisfactory is limited, thanks to a system of monetary incentives.

In addition to the cost and risk advantages, of course, the use of crowdsourcing can have a positive effect on the quality of the results achieved through the problem-solving processes. The literature, examining numerous cases of crowdsourcing,

reveals how the factual outcomes of this model are better or good at least as much as those produced through other methods of problem solving [29]. Schenk and Guittard [30] highlighted the variety of impacts that the model exercises according to the type of outsourced activity, to which corresponds the same quality perception diversity. Indeed, when the crowd performs routine tasks for a company, the benefit for the latter in terms of quality depends on the access to a more or less large pool of contributions, with a more or less complementary nature. In the opposite situation of developing a complex project, quality refers to the characteristics of the elaborated solutions, also considering their different trade-offs and technological paths. Finally, the quality of creative activities coincides with the originality of the crowd's proposals that are assessed comparing them to the company's expectations.

On the other hand, it is more difficult to judge the impact of crowdsourcing on perceptual results; however, the empirical evidence and in particular the rapid increase in crowdsourcing projects and the growth of related expenses suggest a positive impact on the degree of satisfaction of the participants [29]. Moreover, the possibility of contributing to the company processes positively influences the trust and loyalty of the stakeholders toward the organization, since it stimulates their sense of belonging.

Performing a more detailed analysis, we can indicate a series of specific advantages of each of the crowdsourcing declinations identified by Howe [1]. In particular, the benefits offered by the exploitation of the crowd wisdom are linked to access to a wide range of knowledge and to the creation of linking networks between holders and researchers of skills. The crowd creation, in addition to providing a variety of creative ideas, is a valuable tool for the interaction between business and emerging communities in the current scenario dominated by interconnections and for the stimulation of processes for the dissemination of knowledge and constant learning. On the other hand, crowd voting, in the first place, considerably reduces the complexity of the decision-making process, with specific reference to the selection phase of the solution to be implemented, and, secondly, allows the company to find information on consumer preferences. Finally, crowdfunding makes it possible to overcome financial barriers that may hinder or even prevent the realization of a project and fosters both the knowledge of its stakeholders and the approval by them of the actions implemented by the organization.

In general, the incentives to adopt the crowdsourcing model and therefore the main advantages achievable are the availability of a highly motivated and committed workforce that lends itself to perform certain company functions at an extremely low cost for the company that outsources them, the ability to quickly execute large quantities of work and solve problems that are too long and/or complex to be dealt with by a single subject, and, given the benefits listed above, the opportunity to achieve better results overall than those obtainable through other business models and forms of collaboration.

Moreover, in an environment that asks organizations to continuously know how to evolve and adapt, requiring the priority development of dynamic skills and innovative processes, crowdsourcing can also be chosen as a means to foster creativity, both at the individual and at the organizational level, and the consequent innovation. In fact, crowdsourcing seems to facilitate the coexistence of the characteristics of successful innovators, emerged from the Root-Bernstein ten-year study [31]: a good command of knowledge and fundamental tools of the business sector, which is not the only field of specialization and combines with information and concepts belonging to other areas, curiosity and interest primarily for the problem and then for the solution, the attitude to question dominant models and hypotheses, and the conception of knowledge as an integrated form and the search for solutions of a global rather than particular nature. The members of the crowd each possess a unique heritage of knowledge, which can be more or less generic and variously exploitable in

the activities outsourced by the client company, but certainly suitable for analyzing the problem according to original perspectives. In addition to the versatility inherent in the crowd, the company benefits from the strong interest of those involved in a crowdsourcing project for the problem faced, often deriving from the desire to involve in creative processes or the opportunity to put their skills at stake, increasing personal satisfaction and reputation, and, in these circumstances, pre-eminent to that for the solution. Finally, knowledge is now perceived by the crowd as social knowledge, an overall knowledge to which everyone can contribute and of which everyone can benefit, in a logic to which even businesses are called to approach.

3.2 Risks of crowdsourcing

The use of crowdsourcing also involves risks for a company, some common to the outsourcing model and others specific to this phenomenon. As in the case of outsourcing, an organization that assigns the crowd to carry out its activities can renounce moments of learning and the creation of new in-house skills [30]. However, this disadvantage can be limited by constant monitoring by the company of the problem-solving process carried out by the crowd, which is possible in cases of project development in a physical place, where both people who lend their own work can be present as well as the client company, or by preparing appropriate online monitoring tools.

A specific risk of crowdsourcing, and in particular of online forms, derives from the assignment of the organization to a platform owned by third parties and, consequently, from partial dependence on the strategic choices made by these, which at the same time can provide an important support in the management of the process. Another aspect to the detriment of this specific model of joint problem solving is linked to human costs and indeed consists of the negative effect on the subjects involved in terms of compensation for their work. In fact, despite the perceived fairness in the relationship between organization and crowd, which—as highlighted more times—obtains the greatest satisfaction from the activity itself and/or from the result of the same, and not through any monetary compensations, the performances executed have a value far superior in comparison to the remuneration offered for the winning solutions [19]. The amount of payments provided by the company is in no way proportionate to the high quality of the contributions received, which, if acquired through the classic labor market rules, would entail much higher costs. However, this negative dynamic for the crowd is balanced by the already mentioned opportunity to perform a more rewarding work compared to ordinary activities and to assert its importance at different stages of the value production chain, which also guarantees the client company to reduce the risk of a lack of motivation to participate in the crowdsourcing project.

Finally, a significant criticism of this model concerns the rights of intellectual property, in the absence of an employment contract between the members of the crowd involved in the crowdsourcing activities and the client company. It is important to underline, on the one hand, the lawfulness for the company to benefit from the spontaneous contributions received from the crowd, and on the other hand, the unacceptability from the ethical point of view of an exploitation of the same in generating profit, without paying those who produced them. Before the start of the process, it is therefore essential to establish the mechanisms of governance of intellectual property, legal, and payment aspects [32]. A further risk—mentioned above—partly linked to this problem and, more specifically, to incentive techniques, is the contribution of low quality work or even the possible lack of participation; the latter is therefore a crucial challenge in defining how to manage crowdsourcing.

4. Managerial implications and conclusions

Flexibility and adaptability are essential elements for a fashion company to survive in this industry, which is characterized by market changes most significant and rapid compared to the past. Historically, fashion companies based their businesses on the designer's own creativity and experience. In fact, traditionally, design is a valuable strategic asset that is directly related to the competitive advantage of each player acting in this industry. This leads to emphasize the tacit knowledge derived from the experiences, perceptions, and expectations of an individual actor, namely the creative director.

Nonetheless, customers nowadays are looking for more differentiated and personalized products and they less and less recognize themselves in the traditional collections provided seasonally by fashion companies.

Based on this consideration, the fashion industry is seeking alternative and sustainable ways for growth. Among the existing alternatives, open innovation seems to be one of the most fruitful opportunities. The term open innovation refers to the use of external knowledge to emphasize internal creativity with the final aim to expand the market reach [11, 33]. In fact, by openly embracing open innovation, firms can leverage beyond their own resources and develop better ideas faster and at a lower cost. Along this conceptual framework, crowdsourcing is an effective means to implement open innovation strategies.

The use of crowdsourcing provides firms with several advantages. First, a company can save cost and time, since crowdsourcing does not require additional internal resources neither to plan nor realize outsourcing strategies. Moreover, thanks to the participation of a larger number of actors, the time to market can register significant reduction. Second, through crowdsourcing, firms can avoid any risk connected to the path dependency problem, opening the ideation process to a wider range of stimuli and opportunities. Third, thanks to the active consumer participation, firms can increase their loyalty to the brand and their attachment to the product. Finally, firms can profit of the possibility to better understand tastes and preferences of their customer and monitor the trend over the time.

Thanks to the implementation of crowdsourcing activities, various business models are popping up from the public's ideas, modifying the traditional structure of the fashion industry at every level of the value chain. The common element among these numerous and diverse business model configurations is the active role of external stakeholder, especially referring to customers. Engaging the current and potential customers is a good instrument to cope with the growing competition that characterized the fashion industry. This is especially true at an earlier stage of the firms' life cycle; in fact, a strong customer engagement can represent a competitive driver for a new venture. In other words, crowdsourcing provides start-ups with a new way to run their business, lowering the barriers for entry and introducing new critical success factors. Nevertheless, also incumbents can benefit from the involvement of customers in their decision processes with the final aim to draw them closer to their brands. Indeed, ideally in the brand's mind, consumers will be more loyal once they have contributed to build a product.

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